

In the Claims:

Please cancel claims 13 to 84, 98, 99, 102 to 114, and 130 to 134 without prejudice or disclaimer. Please substitute the following claims 1, 2, 6, 7, 9, 10, 85, 86, 87, 90, 91, 96, 97, 100, 101, 115, 116, 123, 126, and 135 for pending claims 1, 2, 6, 7, 9, 10, 85, 86, 87, 90, 91, 96, 97, 100, 101, 115, 116, 123, 126, and 135:

1. A method for detecting multiple reiterated oligonucleotides from a target DNA or RNA polynucleotide, said method comprising:

- (a) hybridizing an initiator with a single stranded-target polynucleotide
- (b) incubating said target polynucleotide and initiator with an RNA polymerase, and a terminator;
- (c) synthesizing multiple oligonucleotides from said target polynucleotide, wherein said initiator is extended until said terminator is incorporated into said oligonucleotide[s] thereby synthesizing multiple reiterative oligonucleotides; and
- (d) detecting or quantifying said reiterative oligonucleotide transcripts.

2. The method of claim 1, further comprising detecting or quantifying said reiterative oligonucleotide by modifying a nucleoside or nucleotide in at least one of the members selected from the group consisting of said terminator, said initiator.

6. The method of claim 1, wherein said polymerase is selected from the group consisting of: a DNA-dependent RNA polymerase, an RNA-dependent RNA polymerase, a modified RNA polymerase, and a primase.

7. The method of claim 6, wherein said polymerase comprises an RNA polymerase derived from one of *E. coli*, *E. coli* bacteriophage T7, *E. coli* bacteriophage T3, and *S. typhimurium* bacteriophage SP6.

9. The method of claim 1, wherein said initiator comprises a molecule selected from

the group consisting of: nucleosides, nucleoside analogs, nucleotide analogs and nucleotides of lengths from 1-25 nucleotides, 26-50 nucleotides, 51-75 nucleotides, 76-100 nucleotides, 101-125 nucleotides, and 126-150 nucleotides, 151-175 nucleotides, 176-200 nucleotides, 201-225 nucleotides, 226-250 nucleotides, and greater than 250 nucleotides.

10. The method of claim 1, wherein said reiterative oligonucleotide transcripts being synthesized are one of the lengths selected from the group consisting of: about 2 to about 26 nucleotides, about 26 to about 50 nucleotides, about 50 nucleotides to about 100 nucleotides, and greater than 100 nucleotides.

85. A method for detecting an oligonucleotide synthesized from a target sequence, the method comprising:

- (a) hybridizing a primer with a single-stranded target sequence;
- (b) extending said primer with a polymerase and nucleotides, such that said polymerase reiteratively synthesizes a nucleotide sequence; and
- (c) detecting oligonucleotide comprised of repeat sequences synthesized by said polymerase.

86. The method of claim 85, further comprising modifying at least one of said primer and said nucleotides to enable detection of said oligonucleotide comprised of repeat sequences.

87. The method of claim 86, wherein modifying further comprises incorporating an independently selected label moiety into at least one of said primer and said nucleotides.

90. / The method of claim 85, wherein said polymerase is selected from the group consisting of *Escherichia coli* DNA polymerase, T7 DNA polymerase, T4 DNA polymerase, *Taq* thermostable DNA polymerase, terminal transferase, and telomerase.

91. The method of claim 85, wherein said primer comprises from 1 to about 25 nucleotides.

96. The method of claim 85, further comprising immobilizing said single-stranded target sequence.

97. The method of claim 85, wherein immobilizing comprises hybridizing a capture probe to a portion of said single-stranded target sequence.

100. The method of any one of claims 4, 88, or 95 wherein said fluorophore moiety is selected from the group consisting of: 4-acetamido-4'-isothiocyanatostilbene-2,2'-disulfonic acid; acridine and derivatives: acridine, acridine isothiocyanate; 5-(2'-aminoethyl)aminonaphthalene-1-sulfonic acid (EDANS); 4-amino-N-[3-vinylsulfonyl]phenyl]naphthalimide-3,5 disulfonate; N-(4-amino-1-naphthyl)maleimide; anthranilamide; BODIPY; Brilliant Yellow; coumarin, and derivatives: coumarin, 7-amino-4-methylcoumarin (AMC, Coumarin 120), 7-amino-4-trifluoromethylcoumarin (Coumarin 151); cyanine dyes; cyanosine; 4',6-diaminidino-2-phenylindole (DAPI); 5', 5"-dibromopyrogallol-sulfonaphthalein (Bromopyrogallol Red); 7-diethylamino-3-(4'-isothiocyanatophenyl)-4-methylcoumarin; diethylenetriamine pentaacetate; 4,4'-diisothiocyanatodihydro-stilbene-2,2'-disulfonic acid; 4,4'-diisothiocyanatostilbene-2,2'-disulfonic acid; 5-[dimethylamino]naphthalene-1-sulfonyl chloride (DNS, dansylchloride); 4-dimethylaminophenylazophenyl-4'-isothiocyanate (DABITC); eosin and derivatives: eosin, eosin isothiocyanate; erythrosin and derivatives: erythrosin B, erythrosin, isothiocyanate; ethidium; fluorescein and derivatives: 5-carboxyfluorescein (FAM), 5-(4,6-dichlorotriazin-2-yl)aminofluorescein (DTAF), 2',7'-dimethoxy-4'5'-dichloro-6-carboxyfluorescein (JOE), fluorescein, fluorescein isothiocyanate, QFITC, (XRITC); fluorescamine; IR144; IR1446; Malachite Green isothiocyanate; 4-methylumbelliferoneortho cresolphthalein; nitrotyrosine; pararosaniline; Phenol Red; B-phycoerythrin; o-phthaldialdehyde; pyrene and derivatives: pyrene, pyrene butyrate,

succinimidyl 1pyrene; butyrate quantum dots; Reactive Red 4; rhodamine and derivatives: 6-carboxy-X-rhodamine (ROX), 6-carboxyrhodamine (R6G), lissamine rhodamine B, sulfonyl chloride rhodamine (Rhod), rhodamine B, rhodamine 123, rhodamine X isothiocyanate, sulforhodamine B, sulforhodamine 101, sulfonyl chloride derivative of sulforhodamine 101 (Texas Red); N,N,N',N'-tetramethyl-6-carboxyrhodamine (TAMRA); tetramethyl rhodamine; tetramethyl rhodamine isothiocyanate (TRITC); riboflavin; rosolic acid; terbiun chelate derivatives; Cy 3; Cy 5; Cy 5.5; Cy 7; IRD 700; IRD 800; La Jolla Blue; phthalo cyanine; and naphthalo cyanine.

101. A method for detecting multiple reiterated oligonucleotides from a target DNA or RNA polynucleotide, said method comprising:

- (a) incubating a single-stranded target polynucleotide in a mixture comprising an initiator, and an RNA-polymerase;
- (b) synthesizing multiple oligonucleotide transcripts from said target polynucleotide, wherein said initiator is extended until terminated due to nucleotide deprivation, thereby synthesizing multiple abortive reiterative oligonucleotide transcripts; and
- (c) detecting or quantifying said reiterative oligonucleotide transcripts.

115. A method for synthesizing multiple reiterative oligonucleotide transcripts from a target DNA or RNA polynucleotide, said method comprising:

- (a) hybridizing an initiator with a single stranded target polynucleotide
- (b) incubating said target polynucleotide and initiator with an RNA-polymerase, and a terminator;
- (c) synthesizing multiple oligonucleotides from said target polynucleotide, wherein said initiator is extended until said terminator is incorporated into said oligonucleotides thereby synthesizing multiple reiterative oligonucleotide transcripts.

116. The method of claim 115, further comprising synthesizing multiple reiterative oligonucleotide transcripts by modifying a nucleotide in at least one of the members selected from the group consisting of said terminator, and said initiator.

123. The method of claim 115, wherein said reiterative oligonucleotide transcripts being synthesized are one of the lengths selected from the group consisting of: about 2 to about 26 nucleotides, about 26 to about 50 nucleotides and about 50 nucleotides to about 100 nucleotides.

126. The method of any one of claims 1, 101, and 115, wherein said incubating further comprises in the presence of ribonucleotides.

135. The method of any one of claims 1, 85, 101 and 115, wherein said initiator is selected from the group consisting of: nucleosides, nucleoside analogs, nucleotides, and nucleotide analogs.

Please add the following new claims 136 to 150.

136. The method of claim 85, wherein said target sequence and said primer are DNA.

137. The method of claim 136, wherein said polymerase is a DNA-dependent DNA polymerase.

138. A method for synthesizing multiple reiterative oligonucleotide transcripts comprising:

- (a) hybridizing a single stranded target polynucleotide with an abortive promoter cassette comprising a sequence that hybridizes to the single stranded target polynucleotide, and a region that can be detected by transcription by

a polymerase;

(b) incubating said target polynucleotide with an RNA polymerase and an initiator;

(c) synthesizing an oligonucleotide transcript that is complementary to the initiation start site of said abortive promoter cassette, wherein said initiator is extended until termination occurs through nucleotide deprivation; thereby synthesizing multiple reiterative oligonucleotide transcripts; and

(d) detecting or quantifying said multiple reiterative oligonucleotide transcripts.

139. The method of claim 138 further comprising:

(a) immobilizing a capture probe designed to hybridize with a target polynucleotide in said test sample;

(b) hybridizing said capture probe with a test sample that potentially contains said target polynucleotide.

140. The method of any one of claims 1, 115, and 138, wherein the target polynucleotide is RNA.

141. The method of claim 140, wherein the RNA is mRNA.

142. The method of claim 140, wherein the RNA polymerase is an RNA-dependent RNA polymerase.

143. The method of claim 142, wherein the RNA-dependent RNA-polymerase is poliovirus RNA polymerase.

144. The method of claim 140, further comprising (a) incubating said target RNA with a reverse transcriptase enzyme.

145. The method of any one of claims 1, 115, and 138, comprising incubating said target polynucleotide with additional ribonucleotides.
146. The method of claim 145, wherein said ribonucleotides are modified.
147. The method of claim 146, wherein said modification comprises the incorporation of a labeling moiety.
148. The method of any of claims 1, 115 and 138, wherein the target nucleic acid is from a virus.
149. The method of claim 148, wherein the nucleic acid is RNA.
150. The method of any one of claims 1, 115 and 138, wherein the target nucleic acid is from a bacterium.